

Economic Aspects of Breast Cancer Screening – The Ontario Experience

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International Meeting on Breast Cancer Screening
April 16 & 17, 2009
Rio de Janeiro, Brazil

Some Key Areas of \$\$ Concern

- Overview of Costs of the Ontario Breast Screening Program
- Downstream Impact from Breast Screening
- Role of Primary Care and Costs to the System
- Annual or Biennial Screening
- Screening in Women 40-49 Years of Age
- Ductal Carcinoma in Situ

Ontario Breast Screening Program (OBSP) – Funding Overview

\$100 Canadian =	\$ 81.00 American (USD)
	180.00 Brazilian Real (BRL)

Currency exchange rate
on April, 2009

How Mammography is Funded in Ontario

- Mammography services are provided in two settings: hospitals & clinics n=240 facilities
- The Ontario Breast Screening Program encourages facilities to join the program and provide programmatic screening to eligible women (over 50 years)
- 141 / 240 have joined the program; programmatic screening is funded by the Ontario Breast Screening Program
- These 141 also provide opportunistic screening for women not eligible for the program (for example, women < 50 years) and bill the government for this through “fee for service”. Any physician can order a mammogram for a patient through the opportunistic system.



Breast Screening Costs in Ontario: April 2007-March 2008

- Number of women screened by the Ontario Breast Screening Program: **381,664**
 - Program Budget: **\$43,000,000**
- Estimate of Mammograms for screening outside of the program: **221,281**
 - Fee for service costs for outside program screens: $221,281 \times \$65.00 = \$14,382,265$
- Grand total of **\$57,382,265** for one year of breast screening in Ontario, reaching > 600,000 of the target population of women age 50-69 years

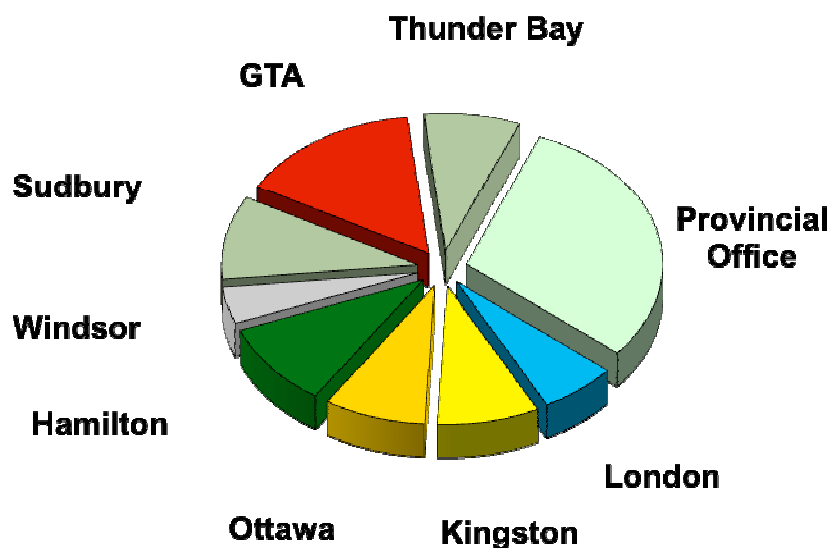
****This is only for the breast screening and excludes follow-up costs.**

Screening Mammography Services Funded Through OBSP

- OBSP funding to sites exceeds opportunistic 'Fee for Service' funding
- This covers costs associated with an organized screening program (e.g., site costs to provide data to information system)

Description of Cost/ Item	Fee for Service payments	OBSP funding to sites in the program
	Mammography sites	
Professional Fee: Fee to physician (reading radiologist) interpreting mammogram	\$25.25	\$25.25
Technical Fee: from preparing for and performing mammogram to recording and communicating results	\$40.00	\$57.00
Administrative Costs of localized activities related to: Use of information system; quality assurance; communications; outcomes monitoring; evaluation & performance reporting	-	
Total Paid per Mammogram (Non-program vs Program)	\$65.25	\$82.25
Difference: OBSP – fee for service funding	\$17.00	

Funding for Regions and Provincial Office Budget (approximately \$9,000,000)



Administrative Costs include:

- ✓ **Program infrastructure (staff, computers, office leases, insurance, etc.):** set goals, objectives, policy, and coordinate program
- ✓ **Quality Assurance:** including physics inspections, technologist image reviews, radiologist reviews, orientation to program, interval cancer reviews, among other initiatives
- ✓ **Information System:** recalls, reminders, follow-up of abnormal screens
- ✓ **Communications:** health promotion/educating participants; engaging community stakeholders and primary care providers
- ✓ **Outcomes monitoring, evaluation & reporting:** program performance and continuous improvement

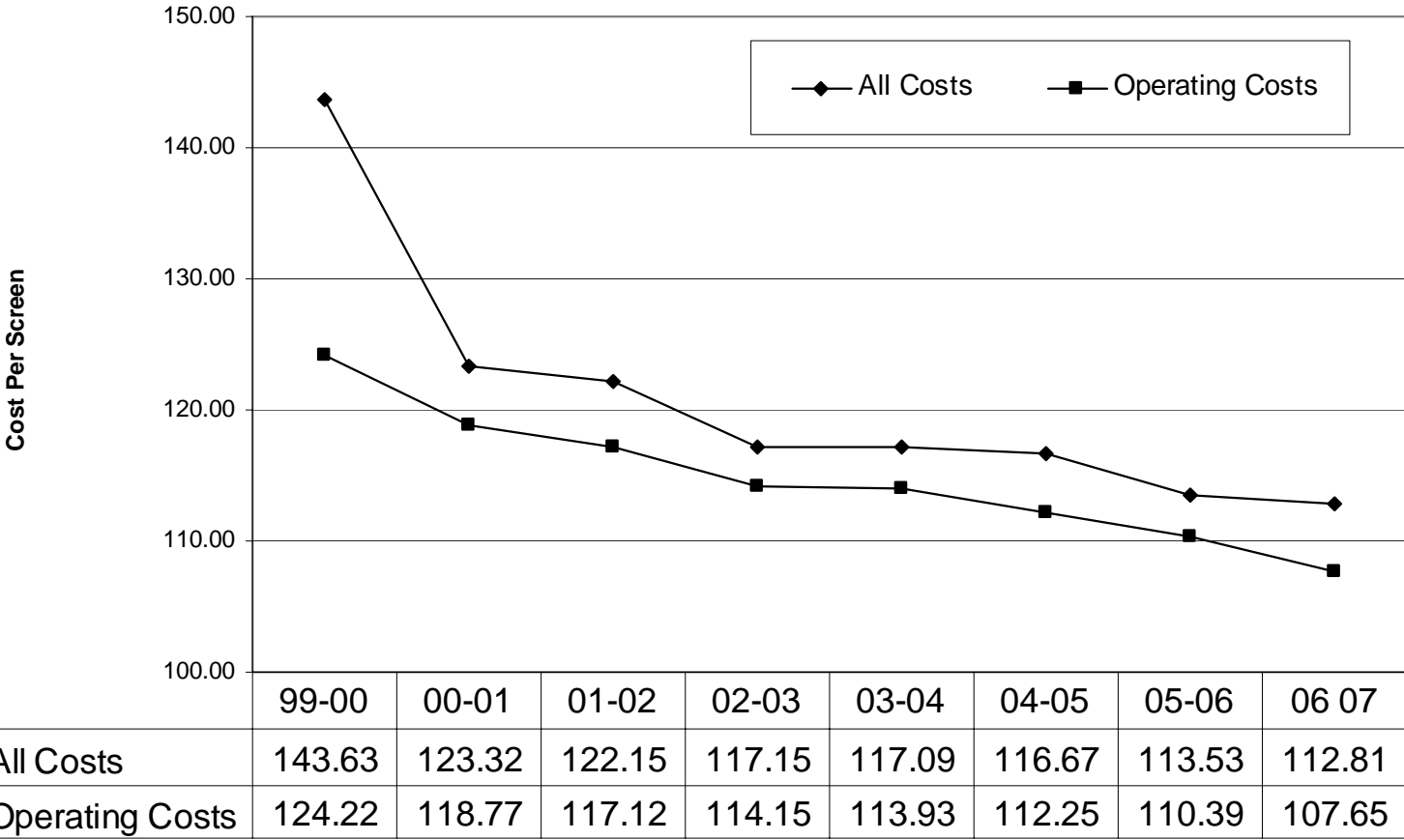


Estimated Breakdown of the \$9 M.

Provincial Administration: Director, Medical lead, Chief radiologist, Health promotion, policy and planning staff,	1.8M
8 Regional centres : Part-time medical coordinators, radiology coordinators, admin, health promotion, data and clerical.	Each between 400,000 to 1.3 M. X 8 = 6.3M
Information System	\$800,000
Evaluation Staff – research analyst, part-time epidemiologist	150,000



Ontario Breast Screening Program Cost Per Screen by Fiscal Year

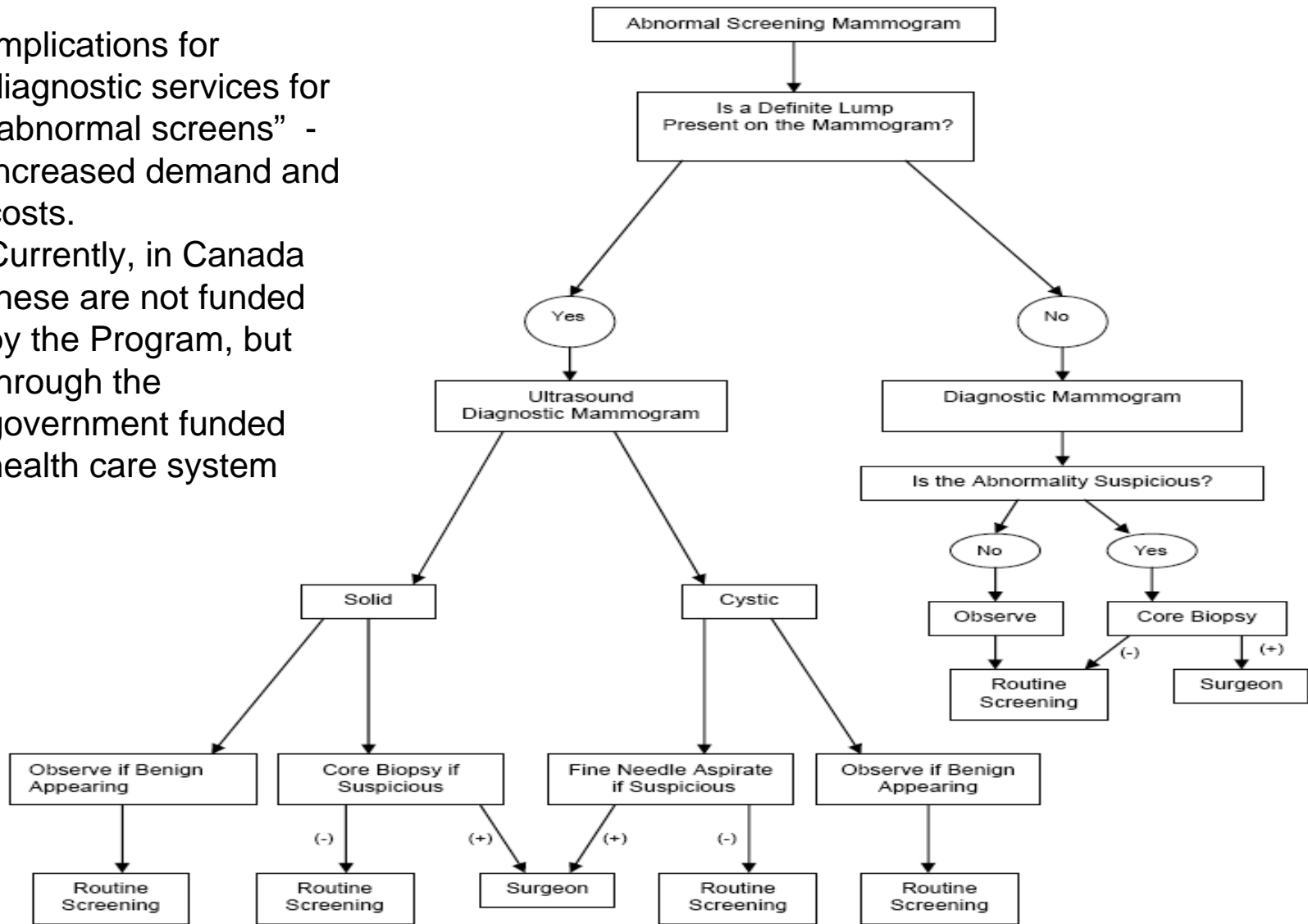


Fiscal Year

Diagnostic Services for the Follow-up of Screen-Detected Abnormalities



Implications for diagnostic services for “abnormal screens” - increased demand and costs. Currently, in Canada these are not funded by the Program, but through the government funded health care system

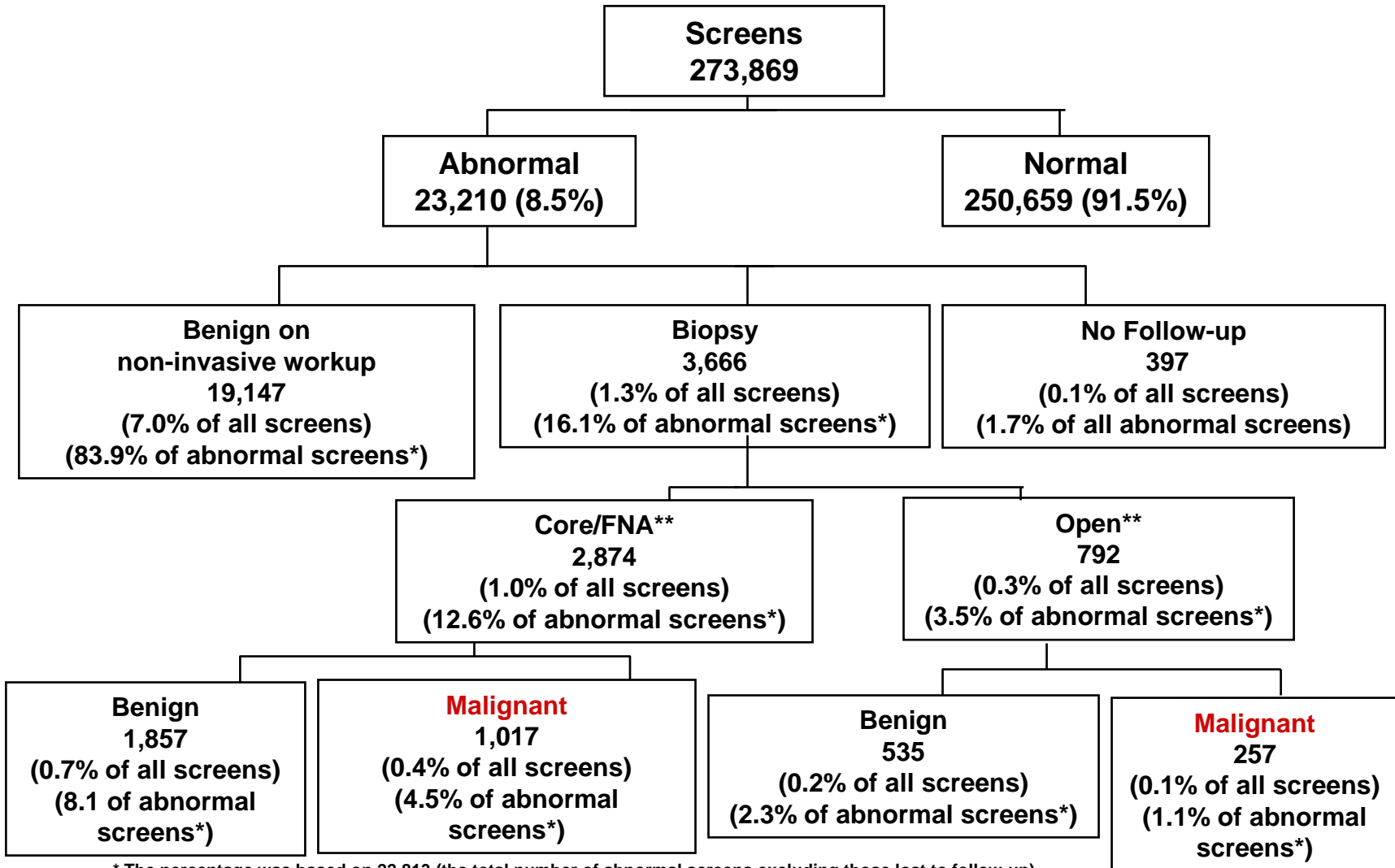


Diagnostic Procedures for Abnormal Screens by Modality of Referral, 2006 – All Ages (OBSP)

	CBE only	MM only
No. Assessed	3942	20,838
% MD Visit	47.6	0.6
% Surgical Consultation	23.5	7.7
% Diagnostic Mammogram	4.1	84.0
% Ultrasound	70.1	66.7
% Fine-Needle Aspiration	3.7	1.6
% Core Biopsy	3.3	13.8
% Open Surgical Biopsy	3.1	3.5
% Other Procedures	2.0	0.3



Screening Outcome Summary 2006: Ages 50-69

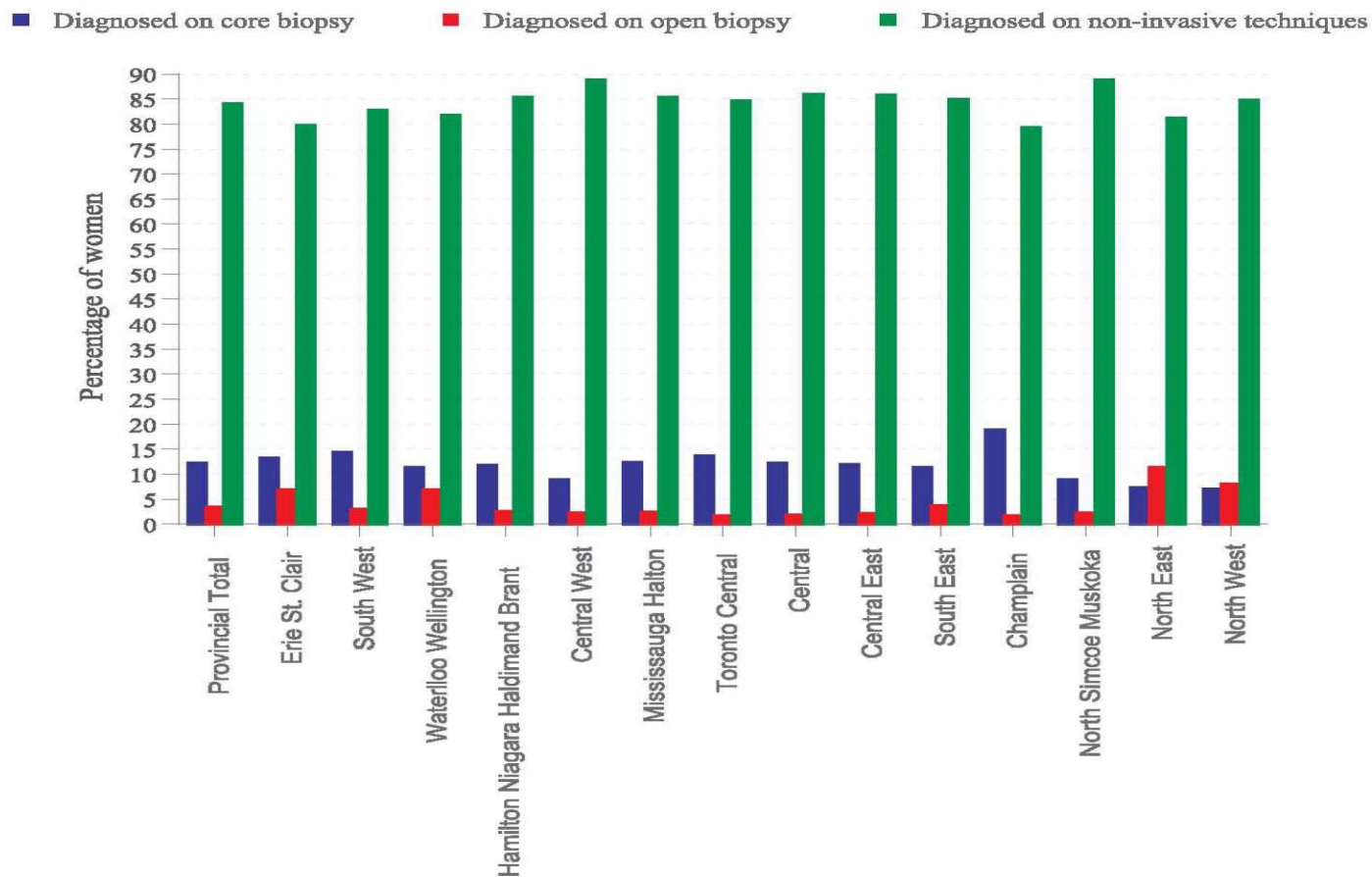


* The percentage was based on 22,813 (the total number of abnormal screens excluding those lost to follow-up).

** Biopsy which resulted in a final diagnosis. Percentages may not add to 100% due to rounding. There were 1,274 breast cancers detected (all referrals).



Type of Assessment Procedure used to reach a diagnosis (Benign and Breast Cancer), by Region in Ontario, 2006



**Screening Intervals:
Increasing Annual
Screening, Despite a
Usual Biennial (2 year)
Interval**



U. S. Preventive Services Task Force

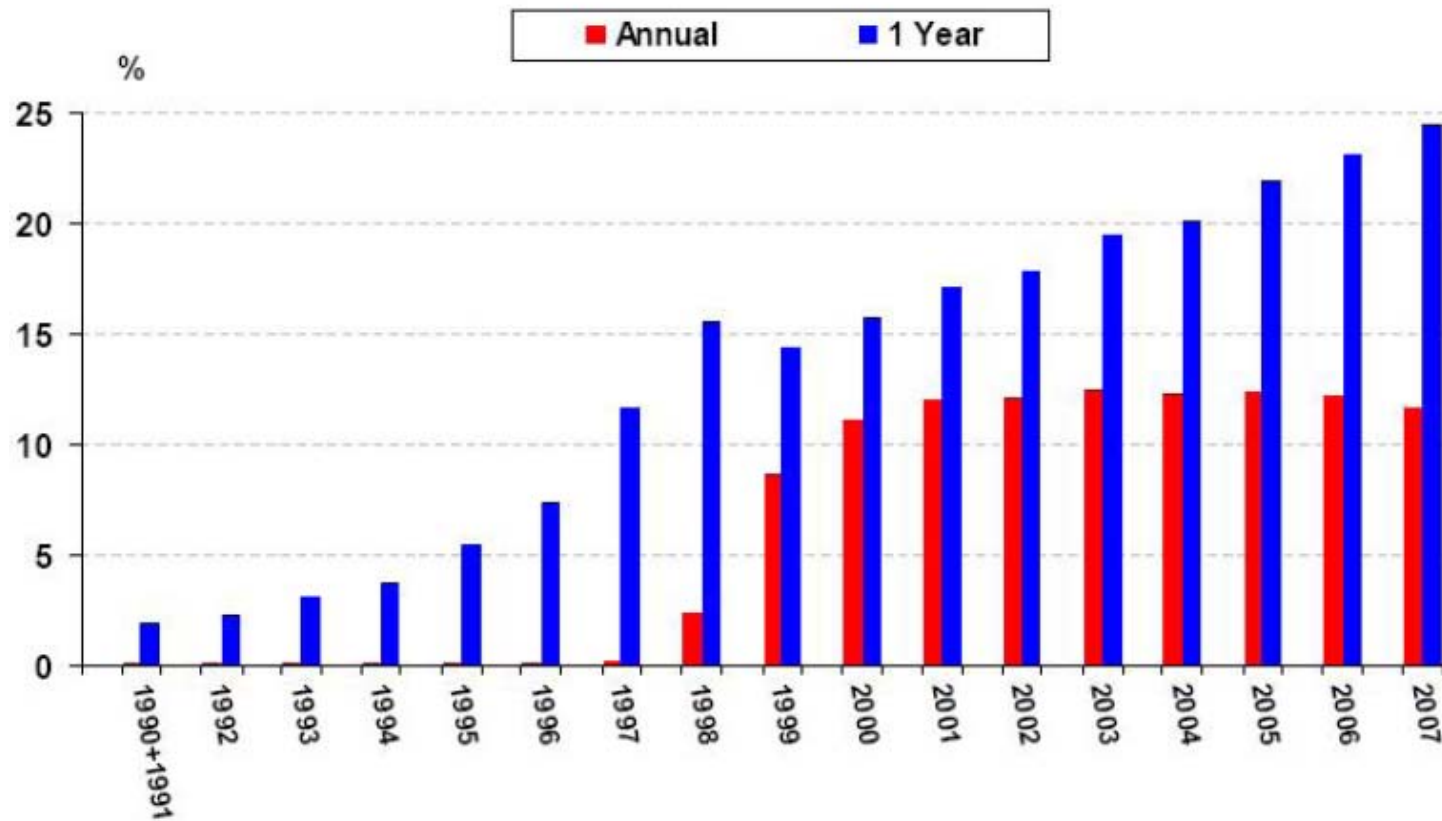
In the trials that demonstrated the effectiveness of mammography in lowering breast cancer mortality, screening was performed every **12-33 months**.

Women 50 and older: there is little evidence to suggest that annual mammography is more effective than every other year.

Women aged 40-49: available trials also have not reported a clear advantage of annual mammography over biennial mammography.

Nevertheless, some experts recommend annual mammography based on **the lower sensitivity of the test** and on evidence that **tumors grow more rapidly in this age group**.

One Year and Annual Recall in Women (50-69 years) attending the Ontario Breast Screening Program (%)



Reasons For Returning In 1 Year

- **Routine Annual Interval (10.45%):**

- Family history breast or ovarian cancer
- Personal history ovarian cancer
- Discretionary family history
- High risk lesions – LCIS, ADH

- **One Time, One Year (26%):**

- Breast density >75%
- Radiologist result requesting this
- Family physician request – for some or all patients
- Assessment of previous abnormal
- Client request



Primary Care Physicians – Incentives to Support Increased Participation



Economic Incentives for Primary Care Physicians in Ontario

- Challenge to address prevention and screening in a busy primary care practice setting
 - However, a physician recommendation for screening is effective
 - The aim is to have primary care physicians working in “teams” to address needs of their practice “populations”, including screening
 - New fees and bonuses paid by government to primary care physicians for increasing participation rates (minimum patient population of 650 to qualify)
- ✓ Levels of annual payment (\$) for eligible patient participation in mammography screening:
 - ✓ 55% - 220
 - ✓ 60% - 440
 - ✓ 65% - 770
 - ✓ 70% - 1320
 - ✓ 75% - 2200
 - ✓ Also \$6.86/eligible patient every 2 years: for contact made to schedule an appointment for preventive care



Screening Expenditure For Women In Their 40's

- Canadian Task Force Guideline: Gives a “C” recommendation – cannot recommend for or against including routine breast screening in preventive health care
- Prevalence of Screening in Canada: From “fee for service” billings in Ontario, there is a participation rate in opportunistic screening of about 18% of Canadian women aged 40-49
- Are they eligible to participate in organized breast screening programs?
 - 9 provinces/territories = Yes
 - 3 provinces = No
- In the programs that allow women of this age group to join, there is no promotion or recruitment of this age group and only some of the provinces provide reminder letters when women in their 40's are due for the next mammogram.

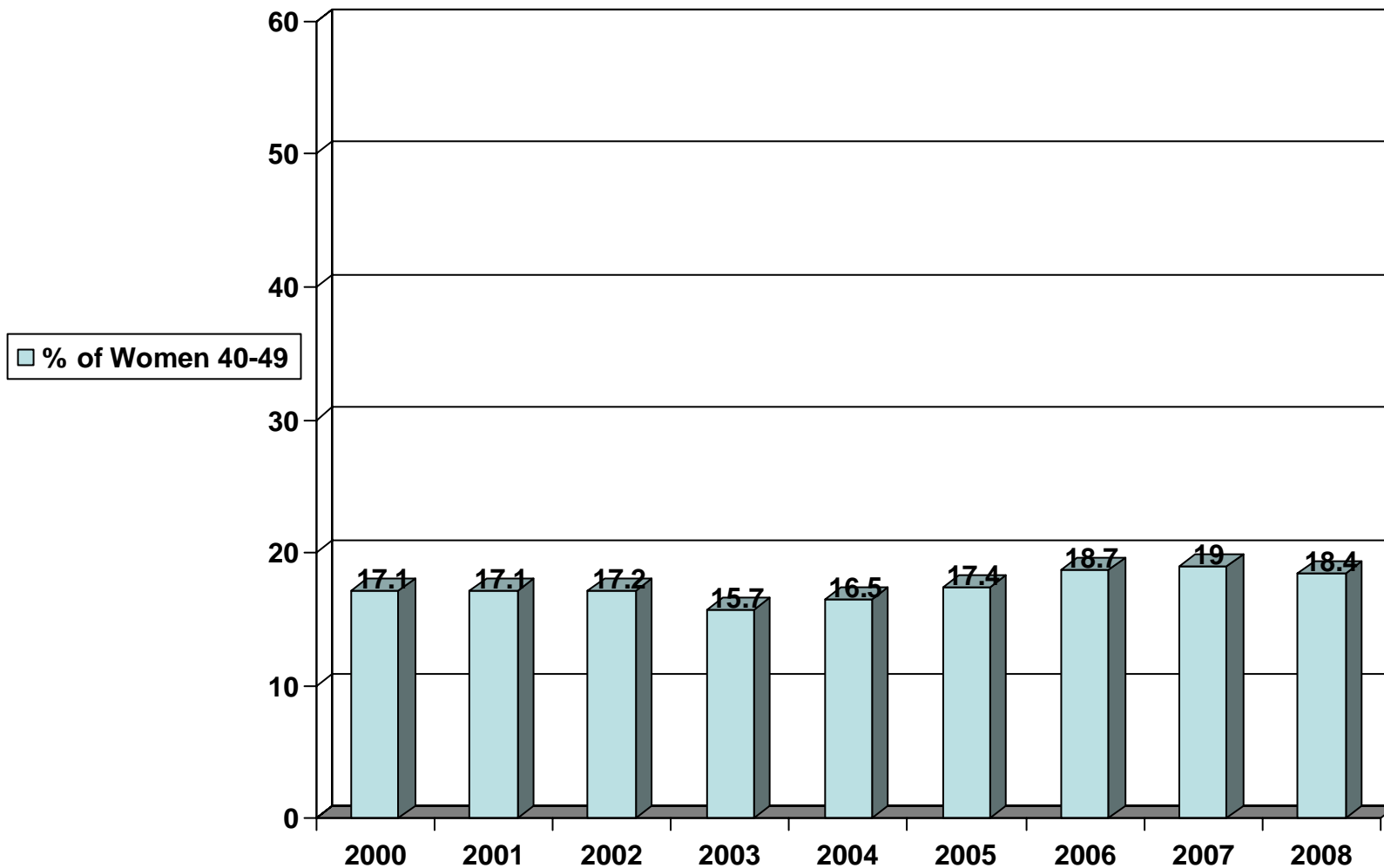


Selected Indicators by Age Group for Women Participating in Canadian Screening Programs

	40-49 years	50-59 years	60-69 years
Abnormal Call Rate on Initial Screen	13.4	12.6	10.5
Cancer Detection Rate (per 1000 screens)	2.1	4.0	7.4
In-Situ Cancer Detection Rate (per 100 screens)	1.0	1.0	1.8
Positive Predictive Value (%) of Initial Screen	2.3	4.0	8.9
Positive Predictive Value (%) of Rescreen	2.6	6.0	9.1



Trends in Mammography in Ontario Women, 40 – 49 Years of Age



Ductal Carcinoma in Situ – A Mammography Screening-Detected Condition



Ductal Carcinoma in Situ (DCIS)

Some experts view the over-diagnosis and treatment of ductal carcinoma in situ (DCIS) as a potential adverse consequence of mammography.

DCIS represents a heterogeneous group of diseases characterized by the proliferation of malignant epithelial cells that are confined within the mammary ducts

Natural history is poorly understood – most lesions are identified by microcalcifications discovered at the time of routine screening mammography and are non-palpable

Dramatic increase in the incidence of DCIS in the past two decades - in the U.S. from 2.4 per 100,000 women in 1973 to 15.8 per 100,000 in the early 1990's.



Ductal Carcinoma in Situ (DCIS)

- Autopsy series suggest that there is a significant pool of DCIS among women who die of other causes, (16% of autopsies of asymptomatic women)
- Treatment options for local control:
 - Mastectomy: 98-100% 10 yr. survival
 - Breast Conserving Surgery & radiotherapy: 95-100% 10 year survival
 - Breast Conserving Surgery alone
- Clinical guidelines are evolving –
 - which women can have breast conserving surgery alone, without radiation?
 - Are too many women treated with mastectomy? - in 2002 – in the U.S. 26% of DCIS patients were treated with mastectomy.
 - What is the role for use of tamoxifen?
- Screening may be increasing the number of women undergoing “over”treatment for lesions that might not pose a threat to their health.



Ductal Carcinoma in Situ (DCIS)

- Can recur (13.4%) as DCIS, but approximately 50% of recurrences have been shown to be invasive Ca.
- Proportion of breast cancer detected by Canadian screening programs that are DCIS:

TNM Stage	Ages 49-49	Ages 50-59	Ages 60-69
0 (in situ)	29.9	33.5	28.7
I	39.9	41.5	46.6
II	27.6	23.1	22.6
III/IV	2.6	2.2	2.0

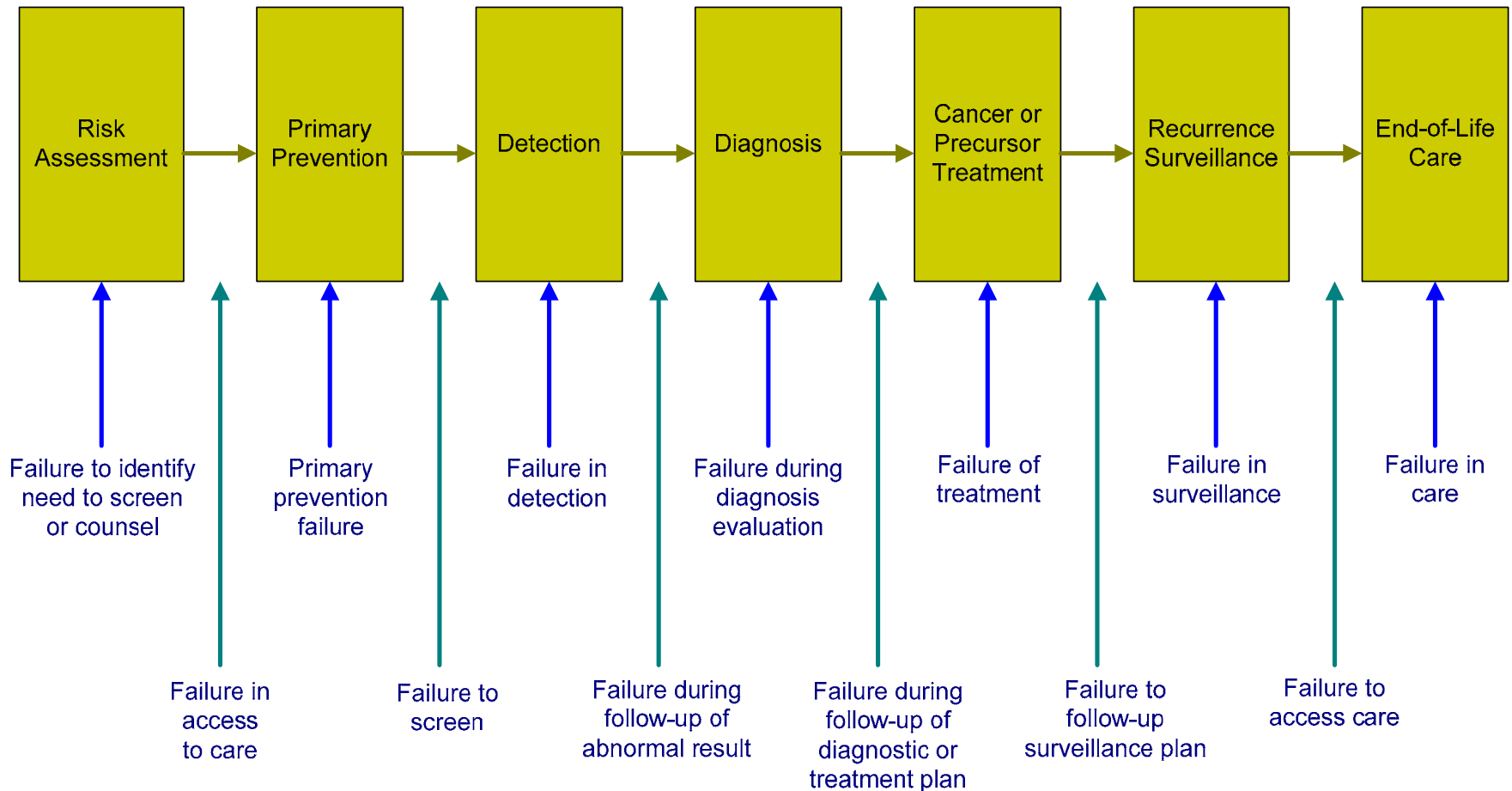
Organized Breast Cancer Screening
Programs in Canada 2003 and 2004,
2008



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TYPES OF CARE – "A Framework for Improving Quality of Cancer Care"



Potential Failures During the Processes of Care



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“ To move forward in the improvement of quality, the priorities for change and the funding for quality over quantity need to become more clearly integrated into policy decisions at the national, community, organizational, and practice levels.”

Zapka JG, Taplin,SH, Solberg LI and Manos MM. “ A Framework for Improving the Quality of Cancer Care: The Case of Brest and Cervical Cancer Screening” . Cancer Epi, Biomarkers & Prevention. 2004